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Methane adsorption on activated carbon

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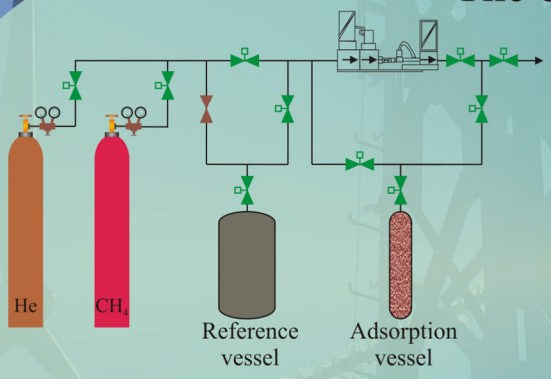
Methane storage in adsorbed form is a promising way to store effectively and safely fuel for vehicular transportation or for any other unexplored decentralized application [1].

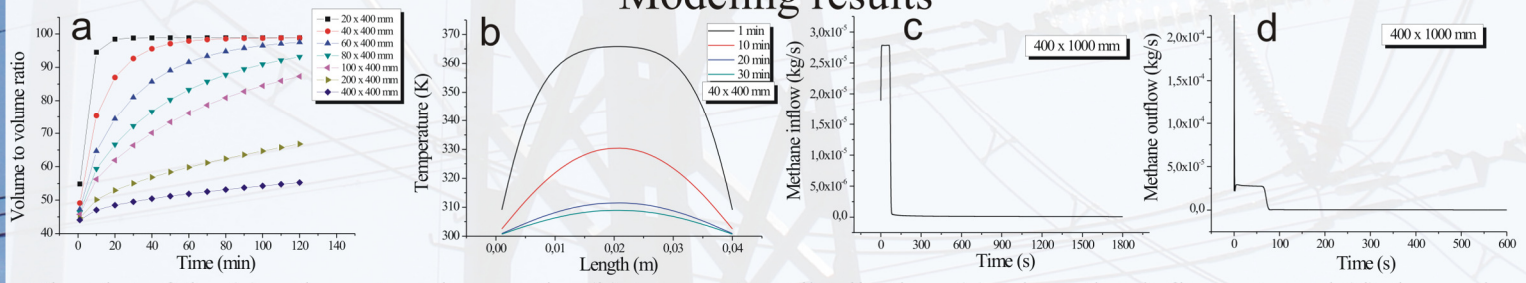
In a solid adsorbent, nanometer wide pores can trap methane by van der Waals forces as high density fluid at low pressure and room temperature [2].

The experimental setup



Activated carbons with large surface area and high porosity are particularly suitable for methane storage applications at moderate pressures [3,4].

Modeling results



The plot of the (a) volume to volume ratio, (b) temperature distribution, (c) adsorption inflow rate and (d) desorption outflow rate as a function of time.

Outlook

In this project we study and test the main thermodynamic and kinetic characteristics of methane adsorption and desorption on activated carbon. Both calculations and measurements will be performed to enhance our knowledge about the general performance and the cyclic behavior of the adsorption and desorption processes.

References

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